Renewable Interconnectivity Solutions

amsc

reliable, scalable, cost effective

Gridtec Solutions

Renewable sources of energy will play a significant role in the future of power

Wind and solar installations continue to increase as utilities and power providers are looking for more sustainable, abundant and cleaner sources of energy.

However, the intermittent nature of wind and solar can create voltage stability problems between the transmission system and the provider. In response, utilities and regulators are increasingly mandating strict grid interconnection requirements.

Renewable energy producers must condition the power produced in order to interconnect with the power grid and not interfere with the grid's overall performance.

Advantages of utilizing AMSC's engineering and grid interconnection solutions

- World-class expertise in grid interconnection and power engineering
- Patented technology to provide dynamic reactive power support for the electric power and renewable energy industry
- Provides steady-state voltage regulation
- Delivers superior transient response and overload capability
- Improves grid reliability by stabilizing voltage
- Dynamically generates or absorbs VARs
- Modular construction enables quick deployment and future flexibility
- More compact and less costly to install than competing systems
- Highly efficient, resulting in lower operating cost than other solutions
- Advanced, parameterized control system allows for wide range of applications and future flexibility

Alleviate voltage instability. Conform to grid standards and requirements. Enhance reliability.

Through AMSC's Gridtec Solutions, we provide a variety of offerings that enable wind and solar energy generation systems to meet minimum requirements. We understand our customers' needs and take a customized approach that results in a cost-effective solution. AMSC's Gridtec Solutions enhance the ability of renewable energy power plants to stay online and help prevent nuisance tripping of solar inverters and wind turbine generators. In turn, this helps maximize the power plant's output, which leads to increased revenues.

- **Help energy plants conform to local interconnection requirements**
- **Enhance wind park & solar plant reliability**
- **Reduce voltage variations and enhance grid stability**
- **Maximize generation time**

D-VAR®: Ideal for meeting grid interconnection standards

Located at the wind or solar plant substation, our D-VAR solutions provide the critical dynamic reactive compensation essential to connect renewable power plants to the grid effectively and in compliance with even the most stringent interconnection requirements.

The D-VAR solution is a cost-effective solution for steady-state voltage regulation, power factor correction, dynamic reactive support, system stability improvement, power oscillation damping and low and high voltage ride-through (LVRT, HVRT) capability for entire renewable power plants.

The D-VAR control system actively monitors the voltage and current at the point of interconnection and dynamically adjusts its output depending on the required compensation. Monitored voltages and currents are also passed to and recorded by the system's advanced data acquisition system, which is comparable to a high-end stand-alone power quality meter.

By combining the D-VAR system with switched shunt devices, the solution tends to be more efficient and lower cost than a solution utilizing only dynamic devices.

Additionally, if a wind turbine or a solar converter has a variable reactive power capability, the D-VAR system can communicate with the wind or solar plant controller to leverage the use of available reactive capability.

D-VAR® RT: In-turbine solution to improve ride-through ability

Installed inside individual turbine towers, the patent-pending D-VAR RT can be easily added to new wind turbines or retrofitted to existing turbines. It enables individual wind turbines to continue operating smoothly by dramatically improving the ability of the turbines to ride through power grid voltage disturbances that might otherwise interrupt operation.

A powerful, cost-effective technology, the D-VAR RT provides reactive support to the power grid during system events, and also can optionally act to regulate the power factor of the wind power plant such that the plant can comply with even the most stringent interconnection requirements.

Problems solved:

- Voltage regulation
- Power factor correction
- Dynamic reactive current support and low and high voltage ride-through

Wind RT™: Simplest, most reliable and cost-effective LVRT retrofit option

The Wind-RT retrofit system detects voltage dips on the power system and quickly (within 20 ms) isolates the turbine from the power grid. It then acts to precisely absorb the power generated by the wind turbine to maintain constant turbine speed and torque while providing reactive power to keep the turbine magnetized and at a constant voltage. Once the voltage dip recovers, the turbine is smoothly reconnected to the power grid, resulting in dramatically improved LVRT and more power generation.

Developed specifically to meet China's grid codes, the Wind-RT prevents turbines from tripping, independent of the depth of the grid voltage sag, and has a robust design that handles high dv/dt at generator terminals.

Renewable Interconnectivity Solutions

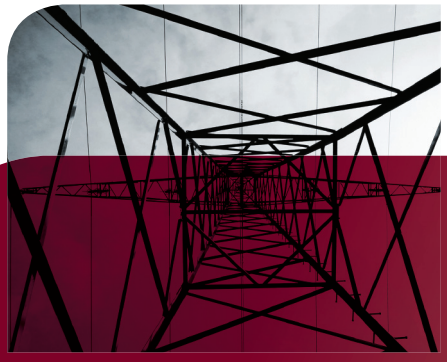
About AMSC's Gridtec Solutions

AMSC's Gridtec Solutions are a set of engineering planning services and advanced grid systems that optimize network reliability, efficiency and performance from the point of generation through transmission and distribution. We supply components, systems and solutions to some of the industry's biggest names. From wind parks to solar power plants and from utilities to large industrial manufacturers, our commitment is to deliver the right solution for our customers, each and every time. Whether a simple component or complex system-level solution, we focus on ensuring that the investment is right, and right for you – delivering reliability, security, efficiency, scalability and tangible long-term benefits.

For invaluable advice and compelling solutions, we are the partner you can turn to.

About AMSC

AMSC (NASDAQ: AMSC) generates the ideas, technologies and solutions that meet the world's demand for smarter, cleaner … better energy. Through its Windtec Solutions, AMSC enables manufacturers to launch best-in-class wind turbines quickly, effectively and profitably. Through its Gridtec Solutions, AMSC provides the engineering planning services and advanced grid systems that optimize network reliability, efficiency and performance. The company's solutions are now powering gigawatts of renewable energy globally and enhancing the performance and reliability of power networks in more than a dozen countries. Founded in 1987, AMSC is headquartered near Boston, Massachusetts with operations in Asia, Australia, Europe and North America.



Talk to us about

- **Solving your most complex power challenges**
- **Enhancing competitive advantage**
- **Improving your system's performance, reliability and profitability**

Whether you wish to make new advances in renewable technology, optimize power generation or delivery, or simply gain a better understanding of the issues you face, please get in touch. We're here to help.

www.amsc.com

smarter, cleaner
...better energy

amsc

RenIntCon_Bro_1111